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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,711	12/27/2001	Akio Nagasaka	HITA.0151	9249

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EXAMINER

LE, BRIAN Q

ART UNIT PAPER NUMBER

2624

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,711

Applicant(s)

NAGASAKA ET AL.

Examiner

Brian Q. Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment and Arguments

1. Applicant's amendment filed January 25, 2006, has been entered and made of record.
2. Claims 11-18 were rejected under 35 U.S.C. 101 are now withdrawn.
3. Applicant's arguments, see Remarks, filed 01/25/2006, with respect to the rejection(s) of claim(s) 1-28 under 35 U.S.C. 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sugaya et al. U.S. Patent No. 6,665,668.
4. Claims 16 and 18 are amended; therefore, require further searches and considerations.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 5-6, 10, and 16-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As to claims 5-6 and 10, the limitation regarding to "elastic matching of one-dimensional features strings" is not supported in the specification. The term "elastic matching" is not understood by one of the ordinary skilled in the art. For claim 16, the limitation "The program wherein the module for detecting said character region extracts a character image feature string along one dimension of the character region or extracts the character image of interest by **counting a number of edges** with a predetermined luminance change" is not supported in the original disclosure. Referring to

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claim 17, the specification further does not show the method comprising “a module for removing line border blurring by correcting a border pixel luminance value into a maximum or minimum luminance value of adjacent pixels” (Emphasis added). Regarding claim 18, the original disclosure does not show the support for the step of “removing non-character background in the image by outlining the character region with a rectangle box having a sufficient margin, then removing pixels outside of the rectangle box, and wherein the outputting step outputs the character region with the rectangle box”. The Applicant **must clearly show** (page number and line number) the support for the **claimed** limitation and **amended** limitation.

Claims not specifically addressed depend from indefinite antecedent claims.

Claim Objections

7. Claims 3-6 and 9-10 are objected to because these claims are very difficult to understand due to the use of confusing language. Appropriate correction is required. The prior art rejection based on the Examiner’s best understanding.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claims 1, 2-8, 9-14, 16, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohya et al. "Recognizing characters in scene images", I.E.E.E. Pattern Analysis and Machine Intelligence, Volume 16, Issue 2, Pages 214-220, and further in view of Sugaya et al. U.S. Patent No. 6,665,668.

Regarding claim 1, Ohya teaches a method for searching at least one character image embedded in an image (abstract), comprising:

- providing the image (abstract);
- detecting a character region in the image (page 215, second column, first paragraph) based upon a shape thereof (FIG. 1-FIG. 3);
- extracting a first feature of the character region (FIG. 2, region number = 1);
- providing a character string of interest (FIG. 1-FIG.3);
- extracting a second feature from the input character string (FIG. 2, region number = 2);
- comparing the first image feature with the second image feature to determine a level of similarity (page 215, second column, first paragraph and page 217, first column); and
- outputting the character region or the input image comprising the character region with based on the level of similarity (FIG. 4).

However, Ohya does not explicitly teach that an input of character string can be by from user's interest. Sugaya further teaches a method of processing document and searching string image (abstract) wherein receiving an input of a character string of interest by a user (column 5, lines 1-10 and column 7, lines 30-45). Modifying Ohya's method of method of searching for character string image according to Sugaya would able to user to further select interested character string

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to be extracted (column 7, lines 30-45). This would improve processing and therefore, it would have been obvious to one of the ordinary skill in the art to modify Ohya according to Sugaya.

Regarding claim 2, Ohya teaches the display or both high level of similar and low level of similarity (page 217, first column). However, Ohya does not explicitly teach the method for searching character image in an image, wherein at the step of outputting said character region outputs character regions in the descending order of the level of similarity. The Examiner takes Office Notice that it would have been obvious to one skilled in the art that the level of similarity can be output at the descending or ascending order as a conventional displaying order. This type of output (descending/ascending) output would have been obvious to one of the ordinary skilled in the art to organize the output data/level of similarity.

Regarding claim 3, Ohya teaches the method for searching at least one character string image in an image wherein the step of detecting said character region determines as the character region where equi-luminance pixel strings each of which has luminance differences in a pre-designated range and is consecutive as long as a pre-designated extent, are locally concentrated (the detection of character if pixels of the detected character have similar pixel values which are different from the background pixels values) (FIG. 1-FIG.3 and page 215).

For claim 4, Ohya teaches the method for searching at least one character string image in an image wherein the step of detecting said character region determines the character region where equi-luminance pixel strings, each of which has a length equal to or longer than a pre-designated length in both vertical and horizontal directions and has a luminance difference within a pre-designed range in both of the vertical and horizontal directions (page 215).

Regarding claim 5, Ohya teaches the method for searching at least one character string image in an image, wherein, both the first feature and the second feature to be extracted are one-dimensional feature strings (FIG. 1-3 discloses the extraction in one-dimension) of the numbers of edges in the vertical direction obtained by binarization of character regions when the character strings are arrayed horizontally (FIG. 1), and the step of determining a level of similarity determines the level of similarity by elastic matching (calculate similarity) of the one-dimensional feature strings both of which constitute the first image feature and the second image feature (page 215, second column).

For claim 6, Ohya further teaches the method for searching at least one character string image in an image wherein, both the first image feature and the second image feature to be extracted are one-dimensional feature strings (FIG. 1-3 discloses the extraction in one-dimension) where the numbers of edges of the binarized character region in the horizontal direction when the character strings are arrayed vertically (FIG. 1), and the step of determining a level of similarity determines the level of similarity by elastic matching of the one-dimensional feature strings of the first image feature and the second image feature (similarity calculation) (page 215, second column).

For claim 7, please refer back to claim 1 for the teaching. In addition, Ohya teaches a mean for detecting a character region from the frame of the entered image on the basis of its shape (FIG. 1-3). And an output means for outputting as the result of search the character region matching the visual features in respect of which the level of similarity has been determined or a frame of image containing the region (page 215; FIG. 1-4 and page 217, first column, first paragraph).

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For claim 8, please refer back to claim 2 for further teachings and explanations.

For claim 9, please refer back to claim 4 for further teachings and explanations.

For claim 10, please refer back to claims 5-6 for further teachings and explanations.

For claim 11, please refer back to claims 1 and 7 for further teachings and explanations.

Regarding claim 12, Ohya discloses the method whereby the step of detecting said character region includes extracting lines with a width in a specific range and extracting a concentrated region of the extracted lines as said character region (FIG. 1, FIG. 2 and page 216, B. Detecting Character Candidate Regions).

For claim 13, please refer back to claims 3 and 4 for the teachings and explanations.

For claim 14, Ohya also discloses the method whereby the line width is taken in vertical and horizontal directions (FIG. 1 and FIG. 2).

Regarding claim 16, Ohya further teaches the program wherein the module for detecting said character region extracts a character image feature string along one dimension of the character region (the extraction/segmentation by either vertical or horizontal direction and thus along one dimension of character region (page 215, column 2, A. Image Segmentation Using Local Thresholding, first paragraph; FIG. 2 and FIG. 3)).

Regarding claim 18, Ohya discloses the method further comprising a step of removing non-character background in the image by outlining the character region with a rectangle box having a sufficient margin, then removing pixels outside of the rectangle box, and wherein the output step outputs the character with the rectangle box (FIG. 2; FIG. 3; page 216 and page 218).

For claim 19, please refer back to claim 18 for the teachings.

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10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohya et al. "Recognizing characters in scene images", I.E.E.E. Pattern Analysis and Machine Intelligence, Volume 16, Issue 2, Pages 214-220 and Sugaya et al. U.S. Patent No. 6,665,668, as described in claim 11-14, and further in view of Akira et al. "A method for recognizing character strings from maps using linguistic knowledge.", I.E.E.E. 1993, pages: 561-564.

Regarding claim 15, Ohya does not explicitly teach the concept of concentrated region is decided by projections of the lines in the vertical and horizontal directions. However, Akira teaches a method of searching/recognition of character image embedded in an image (character from maps of various figures) (abstract) wherein concentrated region (pixel density) is decided by projections (multiplying pixels) of the lines in the vertical and horizontal directions (page 562, first column, 3.1 Character Candidates Extraction). Modifying Ohya's method of searching character image embedded in an image according to Akira would be able to one of the ordinary skilled in the art to determine the concentration of the image region by projection of the lines (multiplying pixels) in the x direction with a pixel number in the y direction. This would improve processing and therefore, it would have been obvious to one of the ordinary skill in the art to modify Ohya according to Akira.

Not in the Prior Arts

11. Claim 17 is not found in the prior arts.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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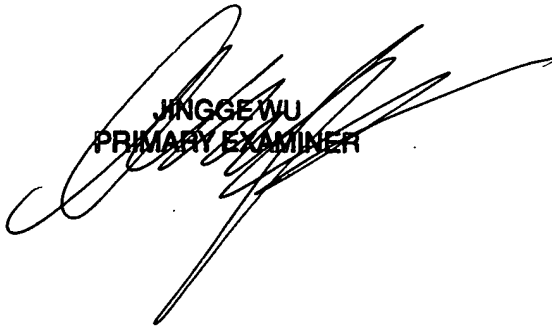
Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Q. Le whose telephone number is 571-272-7424. The examiner can normally be reached on 8:30 A.M - 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BL
March 10, 2006


JINGGE WU
PRIMARY EXAMINER